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December 4, 2001

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SUBJECT: Final Technical Report  
ONR Award No. N00014-98-1-0019  
PI: Robert Guza

Enclosed for your records is the final technical report for the above referenced grant.

Sincerely,

UCSD/Scripps Institution of Oceanography

A handwritten signature in black ink, appearing to read "Ann F. Dunbar", is written over the typed name and title.

Ann F. Dunbar  
Contract & Grant Specialist

Data Enhanced Modeling of Sea and Swell on the Continental Shelf  
ONR Grant No. N00014-98-1-0019  
P.I.: Robert T. Guza

A methodology has been developed to assimilate measurements of wave frequency spectra (eg. from a buoy or synthetic aperture radar) into global and regional-scale wind-wave prediction models. Wave rays (great circles in deep water) are used to establish a relationship between a specific wave measurement and the geographic source location of the wave energy from an earlier model time step. The source of the energy can either be from within the model domain (local wave generation) or originate at the model boundary (input wave energy boundary conditions). The ratio of measured and predicted wave energy is used to correct the original model estimates of source energy and the corrected source information is propagated forward in real time as part of the model's assimilation cycle. Predicted arrivals of southern hemisphere swell along the U.S. west coast were improved significantly by using this assimilation technique. These findings were presented at the 2001 WISE Meeting (Waves In Shallow Environments) and are being prepared for publication as part of the ongoing development and validation of the method at NRL-Stennis.

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